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IS 6359 (1971): Method for conditioning of textiles [TXD 1: Physical Methods of Tests]



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*Indian Standard*

METHOD FOR CONDITIONING OF TEXTILES

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## METHOD FOR CONDITIONING OF TEXTILES

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# *Indian Standard*

## METHOD FOR CONDITIONING OF TEXTILES

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 31 December 1971, after the draft finalized by the Physical Methods of Test Sectional Committee had been approved by the Textile Division Council.

**0.2** Most of the textiles being hygroscopic in nature, the relative humidity and temperature of the atmosphere affect their physical and mechanical properties appreciably. In order that reliable comparisons may be made among different materials and products and among different laboratories, it is necessary to standardize the humidity and temperature conditions and the procedure by which the textile material may be brought to the moisture equilibrium before testing.

**0.3** Assistance has been derived from the following in the preparation of this standard:

Draft ISO Recommendation No. 815 Standard atmosphere for conditioning and testing textiles. International Organization for Standardization.

ASTM Designation D 1776-67 Standard method of conditioning textiles and textile products for testing. American Society for Testing and Materials.

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### 1. SCOPE

**1.1** This standard prescribes a procedure for conditioning of all textile materials.

**1.1.1** This standard also prescribes a procedure for pre-conditioning of textiles which would be necessary if specified in the standard test method or specification for the material under test before conditioning.

### 2. PRINCIPLE

**2.1** The principle followed is to allow the textile material to remain in the conditioning room during its absorption cycle for a sufficient time to reach moisture equilibrium.

### 3. TERMINOLOGY

**3.1 Atmospheric Conditions for Testing (Standard)** — The atmosphere in which physical tests on textile materials are performed. It has a relative humidity of  $65 \pm 2$  percent and a temperature of  $27 \pm 2^\circ\text{C}$  ( *see also IS : 196-1966\** ).

**3.2 Moisture Equilibrium** — The condition reached by a sample or specimen in a controlled atmosphere when the net difference between the amount of moisture absorbed and the amount desorbed, as shown by a change in weight, shows no trend and becomes insignificant.

**3.3 Moisture Equilibrium for Testing** — The condition reached by sample or specimen during free exposure to moving air controlled at specified conditions. For test purposes, moisture equilibrium shall be reached by absorption, starting from a relatively low moisture content. Moisture equilibrium for testing is considered to have been reached when successive weighings carried out at intervals of not less than 2 hours of the textile materials freely exposed to the moving air differ by less than 0.25 percent.

**3.4 Preconditioning** — To bring a sample or specimen to a relatively low moisture content [ equilibrium in an atmosphere between 10 and 25 percent RH and not exceeding  $50^\circ\text{C}$  ( *see Note* ) ] prior to conditioning in a controlled atmosphere for testing. ( While preconditioning is frequently translated as predrying, specimens should not, in fact, be brought to the oven-dry state. )

**NOTE** — These conditions may be obtained by heating air at 65 percent RH and  $27^\circ\text{C}$  ( the standard atmosphere ) to a temperature up to  $50^\circ\text{C}$  in air circulating type oven.

**3.5 Relative Humidity** — The ratio of the actual pressure of the water vapour in the atmosphere to the saturation vapour pressure at the same temperature. The ratio is usually expressed as a percentage.

**NOTE** — Under normal circumstances, the sling or whirling hygrometer or Assmann's are the most convenient instruments for measuring relative humidity, they are sufficiently accurate for this purpose.

### 4. APPARATUS

**4.1 Conditioning Room or Chamber** — equipped with apparatus capable of maintaining standard atmosphere for conditioning and testing throughout the room or chamber within the specified tolerances of relative humidity and temperature and having arrangements for maintenance of proper air circulation ( *see 3.1* ).

**4.1.1** It shall also be equipped with the instruments for recording relative humidity and temperature.

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\*Atmospheric conditions for testing ( *revised* ).

**4.2 Preconditioning Cabinet or Room** — equipped with apparatus capable of maintaining atmosphere for pre-conditioning of textiles throughout the room or chamber within the specified tolerances of relative humidity and temperature ( *see* 3.4 ).

**4.3 Balance** — capable of weighing to an accuracy of 0.25 percent.

## **5. PROCEDURE**

**5.1** Determine the relative humidity and temperature of the conditioning room or chamber ( *see* 4.1 ) and, if preconditioning is also to be carried out, find the relative humidity and temperature of the preconditioning cabinet or room to check whether the conditions meet the specified values of relative humidity and temperature or not. If the conditions are not as required, make adjustments to bring them to the desired limits of temperature and humidity.

**5.1.1** If both preconditioning and conditioning are prescribed in the test method or the specification for the material, proceed as given in 5.2 and 5.3, and if only conditioning has been prescribed, omit 5.2.

**5.2** Expose the specimen or sample in the atmosphere for preconditioning in such a way as to expose, as far as possible, all portions of the material to the atmosphere until the moisture equilibrium is attained ( *see* Note 1 under 5.3 ).

**5.3** Expose the specimen or sample ( already pre-conditioned, if so required ) in the standard atmosphere in such a way as to expose, as far as possible, all portions of the material to the atmosphere until the moisture equilibrium is attained ( *see* Notes ).

**NOTE 1** — In case the material received is in package form, it is preferable to prepare test specimens in loose or open form so that all portions get uniformly exposed to the preconditioning or conditioning atmospheres. For example, in case of yarn in the form of cones or cheeses, suitable skeins may be prepared for conditioning.

**NOTE 2** — For guidance purposes, it may be noted that the minimum time required for the various types of textile materials having moisture regain values of less than 5 percent is about 6 hours to reach moisture equilibrium while for those having moisture regain values of more than 5 percent it is 24 hours.

**5.4** The textile materials conditioned as above be tested according to the procedure laid down.



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